When Private Parts Are Made Public Goods: The Economics of Market-Inalienability

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This Essay develops an alternative theory of market-inalienability and applies it in an analysis of the consequences of the ban on markets in organs. Unlike the conventional view—that the ban is responsible for critical shortages—this theory rests on two ideas: (1) When a market in a good is banned, those who assume the task of procurement will turn to alternative means—exhortation—to induce supply; and (2) Legislation that renders a particular good market-inalienable effectively converts the good into common property, which can be analyzed using the well-developed economic theory concerning the allocation of resources owned in common. Theoretically, a ban on a market in a good that costs less to obtain by exhortation than to purchase might yield a larger supply than a market would. The findings imply that it may be the obstacles to adequate exhortation, rather than the inefficiency of appeals to donor altruism, that are responsible for shortages. While this does not suggest that a ban on markets is efficient, it does demonstrate that the ban need not cause a shortage of some limited set of goods and services, which may include organs. Indeed, rather counter-intuitively, a ban could—however inefficiently—enlarge supply.

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Introduction

Societies have long sought to regulate ethically questionable activities by banning markets. Today, the United States bans markets in elephant tusks, endangered species, slaves, human organs, babies, sex, forms of child labor, and certain hazardous activities. But whereas some market bans—such as those covering elephant tusks and endangered species—were enacted to prohibit trade altogether, the bans on markets in children, sexual favors, and human organs are characterized by a desire that supply flourish, but strictly on a donative, non-commercial basis.

The chief aim of this Essay is to examine the economic theory of market bans as it pertains to these latter ethically problematic subjects whose supply society wishes to encourage. The theory of market-inalienability[1] that I present here is essentially a "thought experiment," deriving hypothetical circumstances under which a market would not result in a greater supply than would a system that relies on donations alone. The theory rests on two insights: (1) In the absence of a market, procurers of market-inalienable goods and services employ an alternative production technique by which they expend effort to exhort suppliers to donate; and (2) An essential feature of market bans is that they make the good or service at issue into common property, and the effort expended to exhort suppliers to donate is thus fundamentally analogous to "fishing" in a commons.

The conventional analysis of common property shows that it is over-exploited, leading to Hardin's famous "tragedy of the commons."[2] For at least some market-inalienable goods and services, however, the over-exploitation of the commons could, in theory, lead to a supply even greater than market supply. Moreover, unlike the over-fishing of the ocean commons, excess production of a market-inalienable good like human organs would not reduce

1. Building on a distinguished philosophical tradition, Radin rejected the commodification of "things important to personhood" and coined the term "market-inalienable" to characterize goods to which individuals have all property rights except the right to alienate through sale. *See* Margaret Jane Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849, 1850, 1903 (1987).

2. Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243, 1243 (1968).

future supplies. Rather, organs otherwise fated to be discarded would be procured. In demonstrating this concealed blessing of the market-inalienable commons, this Essay directly challenges one of the principal objections to market bans—namely, that they *necessarily* cause reductions in supply.

Because the human organ transplantation industry is of large scale, and because the ban on the market in organs is blamed for shortages and long waiting lists,[3] the procurement of donated organs serves as an excellent case-study of the effect of banning a market. Although the theory presented in the following pages is worked out in terms of the organ transplantation industry, it is applicable to a larger domain of ethically problematic activities that society regulates by banning markets.

After reviewing the economic arguments in the debate between Richard Titmuss and Kenneth Arrow over the desirability of a ban on the market in blood, I then review the economic argument that demonstrates that banning markets leads necessarily to shortages. I show this formulation to be fundamentally inapplicable to human organs and to many other market-inalienable goods, and I present "exhortation" as the centerpiece of an alternative conception of the effect of a market ban. I also discuss the role of exhortation in the procurement of market-inalienable goods, using organs as an illustration. I argue that market bans create common property and that exhortation is, in effect, "fishing" in common property "waters." I also derive the result that the organ commons may be *over-exhorted.* Using this model, I explore conditions under which a market in human organs would not generate greater supply than a strictly donative system would produce. I conclude by drawing some of the implications of the analysis.

I. The Debate Between Titmuss and Arrow over Banning a Market in Blood

The modern debate over markets in human tissue began with Richard Titmuss, who argued that an altruistic blood procurement system was not only more ethical than a market, but also more efficient.[4] He found the basis for this claim of efficiency in comparisons of blood quality under the two systems: Titmuss presented evidence suggesting that a commercial system subjected both recipients and donors to unnecessary risks.[5] He reported studies that showed that hepatitis rates from blood transfusions were much lower

3. *See, e.g.*, RICHARD EPSTEIN, ORGAN TRANSPLANTATION: OR, ALTRUISM RUN AMUCK (Univ. of Chicago, Occasional Papers from the Law School No. 31, 1994). In 1994, 25% (724 out of 2933) of those on the waiting list for a heart transplant died before an organ became available. *See* United Network for Organ Sharing, U.S. Dep't of Health and Human Servs., 1996 ANN. REP. U.S. SCI. REGISTRY TRANSPLANT RECIPIENTS & ORGAN PROCUREMENT & TRANSPLANTATION NETWORK 280 [hereinafter ANNUAL REPORT]. By 1996, this percentage had fallen to 20% (746 out of 3698). *See* United Network for Organ Sharing, *Waiting List* (visited Dec. 11, 1997) <http://207.87.26.13/Frame_default.asp?Category=Newsdata>.

4. *See* RICHARD M. TITMUSS, THE GIFT RELATIONSHIP: FROM HUMAN BLOOD TO SOCIAL POLICY (1971).

5. *See id.* at 145-55.

when the blood was donated rather than purchased.[6] One might infer that in the absence of effective tests for diseases like hepatitis, donated blood is of better quality because donors who are not paid for their blood have no incentive to conceal their illnesses. An appeal to altruism may also tend to attract people with healthier habits. Furthermore, offering financial incentives for blood could cause those in need of money to take unnecessary risks. They might, for example, supply too frequently, thereby endangering their own health.

Robert Solow found Titmuss's book to be "a devastating and unanswerable indictment of the American system as inferior to the British in efficiency, morality, and attractiveness."[7] Indeed, Solow felt that the benefit of Titmuss's work was such that "[e]ven if Titmuss fails to produce a convincing explanation of the success of the British system and the failure of the American, the facts themselves pose more of a challenge to 'economists' than to him."[8]

Arrow considered Titmuss's evidence to be a "powerful indictment of the efficiency of blood-giving in the United States."[9] Arrow noted that the basic problem associated with procuring blood had parallels in the trade of other commodities and services in which the buyer is not in a position to know what he is buying, whereas the seller knows what he is selling.[10] The market for used cars is a good example. In cases characterized by this type of asymmetry of information, "[s]ome alternative system for determining quality and providing assurance to buyers is needed."[11] Where the price system breaks down, "ethical behavior can be regarded as a socially desirable institution which facilitates the achievement of economic efficiency."[12]

However, Arrow and Titmuss disagreed fundamentally over how individuals respond when markets are introduced. Titmuss believed that the price incentives offered by markets would drive out altruism and cause donative supply to wither.[13] For example, if organs came to be viewed generally as a commodity, and if some families refused to treat their loved ones' organs in this fashion, they might choose neither to donate nor to sell the organs. In short, Titmuss believed that either a market *or* donation is possible, but not both, and that the introduction of a market would deny people "the right to give."[14]

Arrow found Titmuss's argument wanting on theoretical and empirical grounds. Arrow could "find no evidence for the existence" of such a

6. *See id.* at 145, 154-55 (showing that the rate of transfusion-caused hepatitis was far higher in the United States than in Britain at a time when the British blood supply system was completely non-commercial whereas the U.S. system was largely commercial).

7. Robert M. Solow, *Blood and Thunder*, 80 YALE L.J. 1696, 1696 (1971).

8. *Id.* at 1705-06.

9. Kenneth J. Arrow, *Gifts and Exchanges*, 1 PHIL. & PUB. AFF. 343, 352 (1972).

10. *See id.* at 354.

11. *Id.*

12. *Id.*

13. *See* TITMUSS, *supra* note 4, at 198.

14. *Id.* at 237.

phenomenon, and he stated that, "[i]n any case[,] the empirical evidence can only be made meaningful with at least a minimum of theoretical analysis."[15] Arrow queried, "Why should it be that the creation of a market in blood would decrease the altruism embodied in giving blood? I do not find any clear answer in Titmuss."[16]

Arrow's statement is consistent with the view that altruism is a limited resource that must be rationed.[17] According to this view, altruistic and non-altruistic individuals respond to different incentives, and, furthermore, the ability to substitute the utility of selling for that of donating is small, perhaps zero. Altruistic individuals supply when sufficiently exhorted; non-altruistic individuals supply when offered a satisfactory financial incentive. Neither responds to the other's incentives. For Arrow, therefore, the introduction of a market elicits new supply from non-altruists, all the while leaving the donative supply from altruists unchanged. Likewise, reducing efforts to gain donations does not increase market supply.

Other proponents of markets, reacting to Titmuss, counter with ethical and non-ethical arguments of their own. They contend that it is unfair to deny the poor the right to sell their tissue, which may be their only asset.[18] They point out the irony of a system that prohibits the poor (or anyone else) from selling their organs, but that cannot assure them a transplant at a price they can afford.[19] Market supporters also contend that altruism is not the only way to achieve high quality; for example, Kessel asserted that the problems with safety and insufficient supply in the blood system were caused not by an excess of commercialism in the system, but rather by a lack of commercialism.[20] The quality of blood could be improved, he argued, if strict

15. Arrow, *supra* note 9, at 350-51.

16. *Id.* at 350. For a response to Arrow, see D. COLLARD, ALTRUISM AND ECONOMY: A STUDY IN NON-SELFISH ECONOMICS 147-50 (1978) (offering a simple model of voluntary donation that is consistent with rational economic behavior and with Titmuss's concern for the larger issues in blood donation).

17. In this regard, Solow cites a talk by Dennis Robertson. *See* Solow, *supra* note 7, at 1706 (citing Dennis H. Robertson, *What Does the Economist Economize?*, *in* ECONOMIC COMMENTARIES 147 (1956)). Robertson claimed that economists economize "love," by which Solow explains, "[Robertson] meant that altruism is a scarce resource, and the business of economists is to find institutional arrangements that will accomplish society's purposes without depending too much on disinterested kindness." *Id.*

18. *See, e.g.*, James E. MacDonald & E.K. Valentin, *The Brave New World of Organ Transplantation: Issues and Challenges from a Consumer Affairs Perspective*, 22 J. CONSUMER AFF. 119, 127 (1988) ("'For the poor, the sale of bodily tissue may offer the only . . . opportunity of breaking out of the poverty cycle. My kidney is the only capital resource I still possess that can be marketed in order to provide me with a chance of gaining access to educational and employment opportunities. . . . I am far more able to sacrifice one kidney, rather than the continued sacrifice of what should be the most productive years of my professional life.'" (quoting Bernard M. Dickens, *The Control of Living Body Materials*, 27 U. TORONTO L.J. 142, 165 (1977) (quoting Larry Carter, who intended to sell one kidney to fund a graduate education))) (alterations in original).

19. *See, e.g.*, Marvin Brams, *Transplantable Human Organs: Should Their Sale Be Authorized by State Statute?*, 3 AM. J.L. & MED. 183, 191 (1978).

20. *See* Reuben A. Kessel, *Transfused Blood, Serum Hepatitis, and the Coase Theorem*, 17 J.L. & ECON. 265, 267 (1974).

liability rules were applied to procurers of blood.[21] Strict liability would give procurers strong financial incentives to develop techniques to screen their suppliers carefully.[22]

In the main, however, the quality issue seems of little concern to those who favor markets, and the lines in the debate over commercialism are thus more clearly drawn: Those who favor a market in human organs argue primarily on efficiency grounds, contending that payments to donors would elicit greater supply, thereby reducing shortages;[23] those who oppose a market argue on grounds of ethical principle rather than efficiency.[24]

II. Two Economic Models of the Effect of Banning a Market

The proper domain of the market is, of course, of great and longstanding concern to economists. Some economists have opposed all restrictions on alienability, citing reasons of personal liberty and efficiency.[25] Others have agreed to some restrictions on markets on the non-consequentialist grounds that people have a "right not to act out of desperation."[26] Still others justify restrictions on alienability in cases of market failure.[27]

Where economists agree nearly universally is on the theory that market bans must necessarily cause shortages and other inefficiencies.[28] Section II.A. presents the conventional price-control model of market-inalienability that leads to this result; Section II.B. offers an alternative, more plausible model that yields a different result.

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21. *See id.* at 282-84.

22. *See id.*

23. *See, e.g.*, EPSTEIN, *supra* note 3.

24. *See, e.g.*, Brams, *supra* note 19, at 192 (summarizing and responding to "ethical objections").

25. *See, e.g.*, Richard Epstein, *Why Restrain Alienation?*, 85 COLUM. L. REV. 970 (1985); Elizabeth M. Landes & Richard A. Posner, *The Economics of the Baby Shortage*, 7 J. LEGAL STUD. 323 (1978).

26. ARTHUR M. OKUN, EQUITY AND EFFICIENCY: THE GREAT TRADEOFF 19 (1975).

27. *See, e.g.*, Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972); Susan Rose-Ackerman, *Inalienability and the Theory of Property Rights*, 85 COLUM. L. REV. 931 (1985). A striking example of one such market failure was offered by Titmuss, who opposed a market in blood out of a concern that purchased blood was likely to be inferior to donated blood in quality. *See supra* note 4 and accompanying text.

28. *See, e.g.*, EPSTEIN, *supra* note 3; ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 298-301 (1989) (presenting a simple model of the market ban on kidneys and the resulting social welfare loss); L. Dwayne Barney, Jr. & R. Larry Reynolds, *An Economic Analysis of Transplant Organs*, 17 ATLANTIC ECON. J. 12, 20 (1989) (concluding that "the current system of volunteerism may result in a price for a transplant operation which exceeds what it would be under a strong market approach"); David L. Kaserman & A.H. Barnett, *An Economic Analysis of Transplant Organs: A Comment and Extension*, 19 ATLANTIC ECON. J. 57, 63 (1991) (concluding that "[we] can safely say that [we] have never encountered a single policy that is more at odds with the public welfare than is the current organ procurement policy").

A. *The Conventional Economic Analysis of the Effect of Banning a Market*

Economists have analyzed market bans using the standard price-control model with the banned good's price set at zero. This model implies unequivocally that market-inalienable goods and services will be in short supply. The model's demonstration of welfare losses to banning markets depends critically on the following assumptions:

a. The quality of goods procured is the same whether the goods are sold or donated;

b. Altruists will continue to donate after a market is introduced;

c. When markets are banned, not only is the cost of the good zero, but no other costs are required to procure the donated good;

d. Nothing more can be done to increase supply when markets are banned.

FIGURE 1

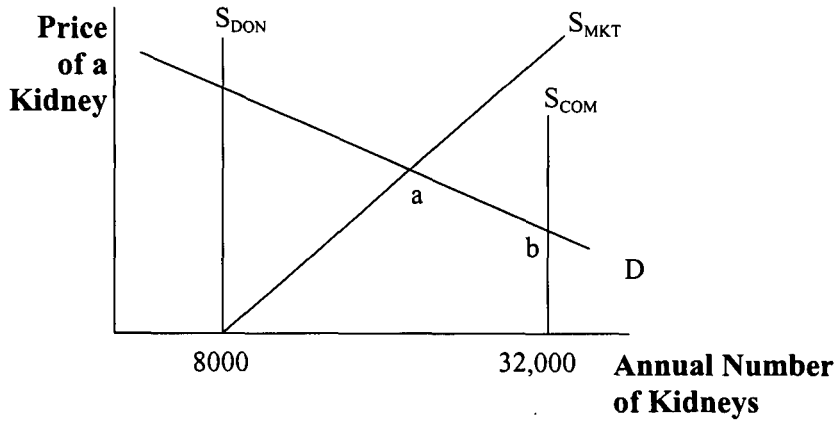

Figure 1 shows Pindyck and Rubinfeld's analysis of the current organ procurement system.[29] The supply of cadaveric kidneys under the current donative system is shown as S_{DON} and is fixed at 8000. Market supply, S_{MKT}, is shown to rise with price, intersecting demand to the right of 8000 kidneys. A command system that made all organs the property of the state could procure

29. *See* PINDYCK & RUBINFELD, *supra* note 28, at 300. Barney & Reynolds, *supra* note 28, and Kaserman & Barnett, *supra* note 28, present more complex models that incorporate the derived demand for physician services and kidneys. The implications of their analyses are similar to those of Pindyck and Rubinfeld's simpler model; the critique presented in this paper is equally applicable to the more complex models.

all medically suitable organs, S_{COM}, the number of which is variously estimated at about 32,000 kidneys per year.[30]

The model implies that a market in organs would ease shortages by increasing supply. In addition, absent a market, a welfare loss might occur if, in order to obtain a share of the fixed supply, consumers engage in activities that they would not undertake in the absence of price controls. For example, waiting in a queue to establish a property right to a price-controlled good like gasoline dissipates its value. That is, the procurement effort associated with waiting in line for gasoline does not increase the *total* supply of the fuel; the activity merely *allocates* a fixed supply and, therefore, from a social perspective, might be viewed as wasteful. If, when markets are banned, procurers engage in activities that would be unnecessary in a market, then a similar welfare loss will occur as the good's rent is dissipated.

To summarize, the economic basis for opposing a ban on a market is that it may cause a variety of inefficiencies, including (i) shortages and (ii) a dissipation of the rents that otherwise would accrue to the owners. Some also oppose the ban on the basis that it may result in a redistribution of some of the good's rent from suppliers to consumers or intermediaries.[31]

Each of the four assumptions of the above model is debatable. First, the concern that markets will endanger quality, originally raised by Titmuss and later supported by Arrow,[32] remains: For example, for technical reasons, it is still difficult or impossible to test donors for conditions such as HIV. Second, altruistic donors may withdraw their supply when markets are introduced. If altruists do withdraw their supply, then the market supply curve in Figure 1 will shift left.[33]

But most open to challenge are assumptions (c) and (d) and their implications. The conventional price-control analysis ignores efforts, other than raising price, that are undertaken to elicit supply. It assumes that people simply line up to donate and that the cost of procuring the donated good is zero. The analysis presumes that people either are or are not altruistic, and that public education efforts to inform them of the need for the donated good or to exhort them to donate are unnecessary. According to this view, a system reliant on donation resembles either an authoritarian system in which people

30. The National Task Force on Organ Transplantation estimated that 20,000 cadaveric donors are available annually, each with two kidneys; this number is reduced by a 20% "discard factor" to account for kidneys procured but not transplanted. *See* TASK FORCE ON ORGAN TRANSPLANTATION, U.S. DEP'T OF HEALTH AND HUMAN SERVS., ORGAN TRANSPLANTATION: ISSUES AND RECOMMENDATIONS 35 (1986). *But see* R.W. Evans et al., *The Potential Supply of Organ Donors: An Assessment of the Efficiency of Organ Procurement Efforts in the U.S.*, 267 JAMA 239, 242 (1992) (estimating the number of potential, suitable cadaveric donors at between 6900 and 10,700, which would yield between 13,800 and 21,400 kidneys).

31. *See, e.g.*, Emanuel D. Thorne, *Tissue Transplants: The Dilemma of the Body's Growing Value*, PUB. INTEREST, Winter 1990, at 37 (discussing the possibility that other factors of production, such as physicians and hospitals, might expropriate a donated organ's rent).

32. *See supra* notes 4-11 and accompanying text.

33. Even if altruists withdrew their supply upon the introduction of a market, the resultant welfare loss would be less than the welfare loss under a market ban. *See infra* Section II.C.

are required to donate at zero price, or a culture in which donation expresses social mores.

The fact is, to secure donations of organs, procurers must urge, coax, cajole, and otherwise exhort next-of-kin of potential donors to donate and hospital staff and physicians to refer potential donors. These donations do not come without cost. After examining the process of procuring market-inalienable goods in the following section, I argue that the activities of urging, pleading, coaxing, and cajoling ought to be viewed as a production process that is an alternative to the market.

B. *Procuring Market-Inalienable Organs by Exhorting Donors*

Let the term "exhortation" be used to describe the non-price efforts used to secure market-inalienable goods and services. Exhortation includes efforts to inform and persuade all participants in the donative system who cannot be paid for what they supply. In the case of organs, exhortation includes efforts by procurement organizations to get next-of-kin to donate organs, and also efforts directed at physicians and hospital staff to identify, without remuneration, potential donors.

Clearly, markets and command systems also rely on exhortation in the form of advertising, social marketing, and public education. In fact, exhortation is often used to secure what can be neither bought nor commanded, such as loyalty, friendship, devotion, and even love. A wonderful illustration of the need for exhortation (or intimidation), even in the face of apparently complete property rights, is given by Barzel in his explanation of how it was possible for slaves in the antebellum South to accumulate assets with which to buy their freedom.[34] Even under command systems, exhortation in the form of moral suasion is very much a feature of organization.[35]

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34. *See* YORAM BARZEL, ECONOMIC ANALYSIS OF PROPERTY RIGHTS 105-13 (2d ed. 1997). The puzzle is: How could a slave have obtained the assets with which to buy his freedom when the slaveowner had complete property rights both to the slave and to any assets the slave could accumulate? Barzel's answer is that the slaveowner still had to spend money to enforce his property right over the slave. That is, the owner had to hire a guard to exhort (i.e., intimidate) the slave. This "transaction" cost drove a wedge between what the slave could have earned had he been able to work for himself and his net value to the owner. Barzel argues that "[t]he need for supervision and the desire to economize on its cost made ownership of slaves less than fully delineated" and that "[s]laves were able to capture some of these undelineated rights—in this case rights to themselves." *Id.* at 110.

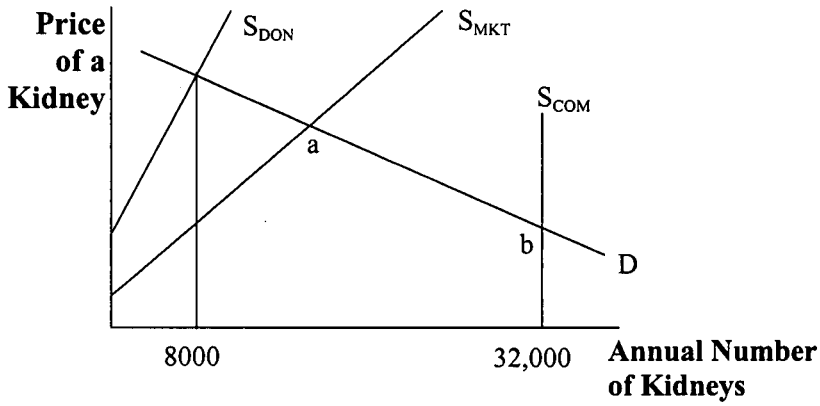
Because estimation of a slave's potential output was subject to error, and because setting production quotas too high would destroy the slave, it was in the slaveowner's self-interest to set quotas below what a slave could actually produce. Barzel suggests that it was also in the slaveowner's self-interest to permit slaves to own and accumulate some of the excess production above the quota. Thus, "partly due to skills in feigning inability, on the one hand, and to activities such as fishing, on the other, as well as the luck of having errors made in their favor," some slaves were eventually able to buy their own contracts. *Id.*

Barzel concludes that wherever there are transactions costs, "rights to assets will never be perfectly delineated." *Id.* at 4.

35. For a description of Stakhanovism, a 1930s program in the Soviet Union which was aimed at achieving increased worker productivity through exhortation, see LEWIS H. SIEGELBAUM, STAKHANOVISM AND THE POLITICS OF PRODUCTIVITY IN THE U.S.S.R., 1935-1941 (1988). In the 1960s

The donative system's reliance on exhortation is especially striking in that it is the *sole* means of procuring market-inalienable goods. Moreover, for some market-inalienable goods, possibly including organs, the number of goods an agency procures will be directly related to the exhortation effort it expends.[36] The costly exhortation activities used by procurement agencies to secure supply ought to be viewed, therefore, as a production technique that is an alternative to expropriating or paying donors directly. The price control model in Figure 1 depicts donative supply, S_{DON}, as fixed, and thus fails to reflect the cost of the effort to procure donations when a market is banned.

FIGURE 2



To depict donative supply more realistically, the price control model is modified in Figure 2 to show donative supply, S_{DON}, rising with expenditures on procurement effort.[37] While the relative positions and shapes of S_{DON} and S_{MKT} shown in Figure 2 are drawn for illustrative purposes only and are in fact

and 1970s, a great debate took place in the socialist world over the efficiency of providing "moral incentives" to workers. *See generally* ROBERT M. BERNARDO, THE THEORY OF MORAL INCENTIVES IN CUBA (1971). Moral incentives are a type of exhortation to be contrasted with material incentives and command. In Cuba, for example, Che Guevara argued that the use of moral incentives could be a partial substitute for intense central planning. *See id.* at viii. Similar attempts were made in China and North Korea. *See id.* at vii-ix. For a comparison of the effectiveness of social marketing campaigns and regulation (i.e., exhortation versus command), see Robert S. Adler & R. David Pittle, *Cajolery or Command: Are Education Campaigns an Adequate Substitute for Regulation?*, 1 YALE J. ON REG. 159 (1984).

36. *See* Emanuel D. Thorne, *The Cost of Procuring Market-Inalienable Human Organs*, 10 J. REG. ECON. 191, 198 (1996).

37. Note that in this figure and in all figures describing exhortation, the price on the y-axis should not be interpreted as the dollar value of the benefits to the supplier but, rather, as the amount the procurer must expend to get the supply and the amount demanders are willing to pay.

unknown, the essential point is that the supply of donations is shown to increase with increased expenditure (unlike S_{DON} in Figure 1).[38]

The effect of banning a market, then, depends on two supply curves that are *both rising* in response to increasing expenditures: the donative supply responding to increased exhortation effort and the market supply responding to rising price. Which scenario garners the most organs for a given expenditure (i.e., which is the rightmost supply curve) becomes an empirical issue.

Organs belong to a class of goods that differ from conventional goods in that people respond to campaigns exhorting them to donate when markets are banned. As indicated in Section II.A., the conventional view of what happens when the price of a good like gasoline is fixed below market equilibrium is that competition for the good encourages consumers to undertake wasteful activities, such as queuing, which activities would be unnecessary in a market. However, the "wasteful" activity undertaken by demanders of organs includes exhorting suppliers to donate. Whereas exhorting suppliers to donate a good like gasoline is not likely to yield much success, individuals do respond to pleas for donations of human organs. Thus, exhorting suppliers to donate a market-inalienable good like an organ may not merely redistribute supply; it may also *enlarge* supply, even beyond what a market would generate.

All else being equal, exhortation will produce a supply that exceeds the market supply when the cost to procurers of the supply garnered by exhortation is lower than the cost of market-generated supply. How can this happen? Part of the answer lies in what motivates donors to respond to exhortation campaigns. Donors respond to exhortation for reasons that may include a sense of duty, responsibility, love, and other psychological rewards. Exhortation by procurers can be thought to supply these donors with information. Because information elicits supply, the number of organs supplied under a market ban should depend on the level of effort expended on exhortation.

Another part of the answer depends on the behavior of procurers designed to appeal to these motives. The focus here is not on the efficiency of donor *motives* (i.e., altruism versus self-interest) but rather on the efficiency of the *actions* of procurers that appeal to these motives (i.e., exhortation versus payments).

The nature of the donative system and its reliance on exhortation is complex, but for the purposes of this theoretical Essay it is sufficient to accept that: (1) Exhortation is an important feature of the donative system; (2) Considerable sums of money are spent exhorting people to give; and (3) For some goods and services, people respond to exhortation by donating. Whatever the motive for donation, exhortation elicits supply, and there is no

38. S_{DON} and S_{MKT} are both shown in Figure 2 as intersecting the y-axis above the origin on the assumption that there is some minimal disutility to supplying an organ that must be overcome either by price or exhortation. *See* discussion *infra* Appendix.

theoretical basis for asserting that the supply generated by exhortation must be smaller than market supply.[39]

C. *Equilibrium Supply Under a Market Ban*

The price-control model predicts unequivocally that a market ban will cause a shortage of organs and a dissipation of rents. By contrast, in the modified price-control model that incorporates the features of a donative system, a market ban does not necessarily decrease supply. Whether equilibrium in the latter will reflect a greater or lesser supply depends on several features of the industry's structure, including the cost of paying suppliers in relation to the cost of exhorting them to donate, the nonprofit/for-profit status of the procuring organizations, and the objectives of these organizations. Perhaps most importantly, the equilibrium supply of organs will depend on how the market and donative sectors interact—that is, on whether the existence of a market will drive out donations.[40]

The price-control model presented earlier assumes that people would continue to donate if a market in organs emerged. According to that model, newly-permitted payments for organs would serve to elicit a supply over and above the donated supply, thereby increasing the aggregate supply.[41] In the following two subsections, I show that regardless of how one conceives of donor behavior, there are conditions under which a market ban might, *as a theoretical matter*, enlarge supply.

1. *Introducing a Market Will Cause Donations to Wither (Titmuss)*

The Titmuss scenario assumes that the introduction of a market will cause donations to wither completely.[42] According to this view, all individuals who supply when exhorted would prefer to sell at any price. Thus aggregate supply is *either* the market supply *or* the exhortation supply.

At present, organ procurement takes place through government-designated nonprofit organizations, each of which, in effect, owns the sole franchise to procure in its region. In this case, where an agency is the sole owner in its region but must compete with other regional sole owners, each agency will produce at the private property equilibrium. Thus, if the marginal cost of exhortation (MC'_{EXH} in Figure 3) is *greater* than the marginal cost of market supply (MC_{MKT} in Figure 3), the equilibrium supply of organs under exhortation (Point 2) will be smaller than the market supply (Point 4).

39. For donors who donate because exhortation provides them with utility that they could have purchased, the marginal cost of procurement by exhortation must exceed the market cost. But the supply curve for donation will be the average cost of exhortation, because market-inalienable goods are common property. *See* discussion *infra* Part III. Thus, even if the marginal cost of exhortation exceeds the market cost, the average cost of exhortation could still be lower than the market cost.

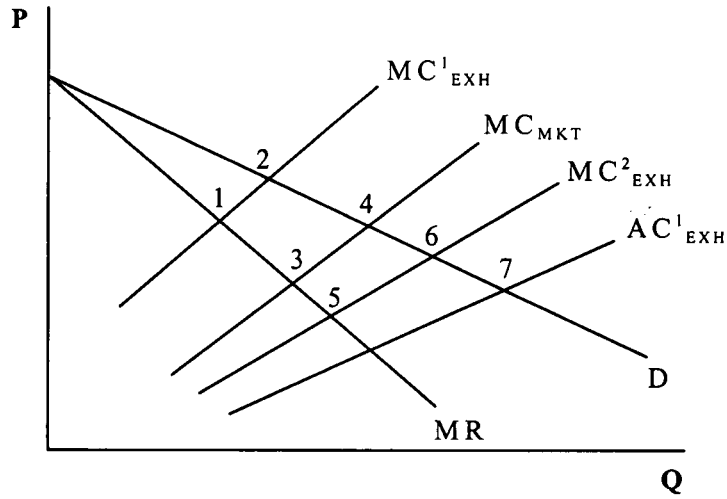
40. *See infra* Appendix (using a model of individual organ supplier behavior to identify the conditions under which those who now donate will cease to do so once a market is established).

41. *See supra* p. 7 fig.1 (S_{MKT}).

42. See TITMUSS, *supra* note 4, at 198-99.

However, if the marginal cost of exhortation (MC^2_{EXH} in Figure 3) is *less* than the marginal cost of market supply, the equilibrium supply of organs under exhortation (Point 6) will be greater than the market supply. If each nonprofit agency chooses to maximize its output instead of its surplus, then it will exhort at Point 7 in Figure 3, where AC^1_{EXH}, the average cost corresponding to MC^1_{EXH}, intersects demand. If it uses donated funds in its procurement efforts, then equilibrium will be to the right of Point 7.

FIGURE 3



Next, consider the case in which a single nonprofit agency is the sole owner in *every* region and has, therefore, a procurement monopoly. If the marginal cost of exhortation is *greater* than the marginal cost of market supply, the equilibrium supply of organs under exhortation (Point 1 in Figure 3) will be smaller than the market supply by a monopolist (Point 3). If the marginal cost of exhortation is *less* than the marginal cost of market supply, the equilibrium supply of organs under exhortation (Point 5) will be greater than the market supply.

If the nonprofit monopolist chooses to maximize its output instead of its surplus, then it will exhort at Point 7 in Figure 3, where demand equals the average cost of exhortation. If it has an excess of funds, then the equilibrium supply will be greater than the supply at Point 7. Once again, the equilibrium supply under exhortation will exceed the market supply if the marginal cost of exhortation is less than the marginal cost of market supply.

2. *Introducing a Market Will Not Affect Donations (Arrow)*

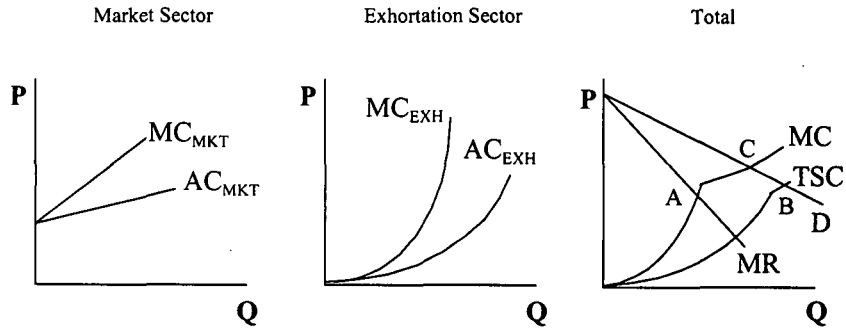
The following assumptions are consistent with Arrow's critique of Titmuss: (1) Individuals who supply when exhorted would not respond to

financial incentives, and individuals who supply when offered a satisfactory financial incentive would not respond to exhortation; (2) Markets would elicit new supply, leaving the exhortation supply unchanged; and (3) Reducing exhortation effort would not increase market supply, and banning a market would not increase donations.

Where a market and a donative sector coexist, total equilibrium supply will depend on the extent to which the industry is competitive. Since the two sectors are independent, the performance of the market presumably will not affect the marginal cost of exhortation. And once again it is assumed that nonprofit organizations organize the donative sector.

Suppose one monopolist procures in both sectors. In this hypothetical situation, such an organ procurer might be a monopolist with two plants using different technologies with different cost structures to produce a homogeneous product (i.e., organs). One plant relies on exhortation; the other relies on the market. The monopolist must decide: (1) how many organs to procure altogether and the price to charge; and (2) how to allocate procurement between the market and donative sectors. The curve in Figure 4 representing the marginal cost of procurement for the monopolist (*MC*) will be the horizontal sum of the curve representing the marginal cost of procurement by exhortation (MC_{EXH}) and the curve representing the marginal cost of procurement by a market (MC_{MKT}). *MC* represents the cost of procuring an additional organ at each level of procurement when procurement by means of exhortation and payment are both available to the procurer. Figure 4 shows *MC* as kinked when MC_{EXH} is initially less than MC_{MKT}.

FIGURE 4



A surplus-maximizing monopolistic nonprofit will maximize surplus when marginal revenue (*MR*) equals *MC*. This equilibrium condition will set both the total quantity procured and the price. If MC_{EXH} equals MC_{MKT} when *MR* equals *MC*, then the for-profit monopoly maximizes profits where *MR* equals MC_{EXH} equals MC_{MKT}. In that case, *MR* intersects *MC* above the kink (not shown) and introducing a market will increase supply. However, if MC_{EXH}

is less than MC_{MKT} when MR equals MC, then the for-profit monopolist maximizes profits where MR equals MC_{EXH}. This appears in Figure 4 as Point A, where MR intersects MC below the kink. In such a case, introducing a market will not increase supply. If MC_{EXH} exceeds MC_{MKT} at all procurement levels, then introducing a market will always increase supply.

Thus, the effect on supply of introducing a market depends on both the nonprofit monopoly's level of exhortation and the location of the kink in the MC curve relative to MR and demand. If the nonprofit chooses to procure at the socially efficient level—i.e., at Point C, *above* the kink in the MC curve in Figure 4—then introducing a market would increase supply; if the level of exhortation is *below* the kink in Figure 4, then introducing a market would have no effect on supply.[43]

The analysis presented here and in the previous subsection shows that if the marginal cost of market procurement is greater than or equal to the marginal cost of exhortation (or, in some cases, the average cost of exhortation), then conditions exist under which a market ban need not reduce supply (at least theoretically). On the other hand, if both the marginal and average costs of exhortation exceed the marginal cost of procurement under a market, then the model suggests that a market ban will reduce supply.

As the next part demonstrates, an additional complication of the donative system's reliance on exhortation is the fact that market-inalienable goods are in essential ways common property, making the exhortation of donors much like "fishing" from a common pool. As will be seen, the appropriate supply of exhorted market-inalienable goods is the supply from the commons.

III. The Common Property Nature of Human Organs

Having shown in Part II that supply elicited by exhortation can exceed market supply, I now show that, because of the attributes of market-inalienability, exhortation-generated supply might be even further enlarged. This result occurs because, as I argue in Section III.A., market-inalienable goods are fundamentally like common property, such that exhorting donations of market-inalienable goods is analogous to fishing in common property waters. I present the economic analysis of common property in Section III.B. and apply the analysis to the supply of market-inalienable goods in Section III.C.

A. *Market-Inalienable Goods as Common Property*

When man-made restrictions on property rights limit the right to *sell* a good but do not assign the rights to the economic value that the resource can earn, then a mixture of private and common property rights obtains. While

43. An output-maximizing nonprofit monopolist will allocate procurement between the two plants by setting $AC_{EXH} = AC_{MKT}$. Total supply will correspond to output at the intersection of demand and the sum of AC_{EXH} and AC_{MKT} (not shown in Figure 4).

individuals are unable to sell market-inalienable goods, they are free to donate such goods, and, if they choose to donate, they can also choose the recipient of the donation.

A market-inalienable good like a human organ is not naturally a common-property good because completely defined property rights could be established without difficulty. Unlike with common-property goods such as fish, air, and minerals, no technical difficulties impede barring free riders from enjoying the use of human organs, nor is the organ's use characterized by indivisibilities. In short, market-inalienable goods could be treated as private goods in the United States.

However, because the rights to the economic value of market-inalienable goods are unassigned, banning a market makes market-inalienable goods common property in a fundamental way. Because a market-inalienable good (and its economic value) will belong not to the owner but to the party to whom the good is donated, the good appears as common property from the perspective of those who want it. Someone who wants the market-inalienable good will engage in activities to obtain it that are remarkably similar to the activities of someone "fishing" in common property waters. A fisherman will invest his labor and capital to catch a fish by dangling a worm before it. If the fisherman is successful, the fish itself is free to him even though the fishing effort may have been costly. Likewise, someone wishing to obtain a market-inalienable good has every incentive to engage in costly exhortation/"fishing" activities that, if successful, will yield him the good for free. In short, by leaving the rights to a good's economic value unassigned, banning a market in that good allows everyone access to its free value and, in effect, creates a man-made common property resource.[44]

This notion that banning a market creates, in effect, a common property resource is an extension of Cheung's insight that whenever a price is fixed below the market price, a common-property rent (non-exclusive income, in his terminology) is created.[45] It would appear, then, that private property, price

44. The class of goods and services that may be considered to have common-property attributes because they are market-inalienable is, in fact, quite broad. The property rights to those goods and services may be restricted in ways that make them either wholly or partially market-inalienable. Sexual favors and basketball talent are both illustrations of market-inalienable resources in that the resource's owner has only a limited right to transact. Our sexual rights are limited by legislation that bans prostitution. Similarly, a talented amateur basketball player's rights are limited by the arrangement among colleges that permits only "donations" of talent, not sales. While in neither of these two cases can the owner legally be forced to supply the resource for free, the owner does not have the right to sell the valuable service. In both cases, the owner retains the right to give the resource away. More importantly, anyone who wants the resource from the owner must exhort the owner to get it.

45. Cheung writes:

> How does price control lead to non-exclusive income? For illustration let us suppose that a tenement's constant monthly market rent of $100 is reduced by law to a controlled rent of $60. Assume for simplicity that this control will last to perpetuity. Who is granted the *exclusive* right to the $40 of rental income taken from the landlord? . . . It would be relatively simple to . . . delineate and assign exclusive-use rights to a portion of the tenement to the tenant. That is, instead of taking $40 from the landlord, part of the physical area of the tenement might be assigned exclusively to the tenant so that the landlord's remaining portion would yield a monthly market rent of $60 . . . . However, when the law governing the control

control, market-inalienability, and common property really comprise varying degrees of property rights to a resource. Between private property goods at one end of the property rights spectrum and common property goods at the other are partial price-control and market-inalienable goods.[46]

The effort expended to establish a property right by waiting in a queue is seen by Barzel as the source of the dissipation of the value of a price-controlled good like gasoline.[47] Barzel's analysis of the dissipation of the price-controlled good's rent is an application and extension of Cheung's insight into the common property nature of this rent. From the perspective of Barzel, Cheung, and others writing about dissipation by rationing-by-waiting, or rent-seeking, the dissipation of producer surplus by these efforts does not increase supply. All that rent-seeking accomplishes is the dissipation of the rent through activities that merely allocate a fixed supply. However, proceeding from Barzel's and Cheung's analyses of partial price controls, I argue here that exhortation-type rent-seeking need not dissipate producer surplus if, by these efforts, supply is increased.

> avoids making the tenant a part owner of the tenement, the assignment of exclusive rights to the portion of rent diverted from the landlord is no simple matter. . . . [C]ompetition among contracting parties for the resultant non-exclusive income will tend to dissipate it.

Steven N.S. Cheung, *A Theory of Price Control*, 17 J.L. & ECON. 53, 60-61 (1974).

46. Exhorting a donation of a partially or wholly market-inalienable good is different from exhorting a donation of a good that is completely private. With a private good, people can choose not only to whom to donate, but whether to donate at all. Norman Shore has brought to my attention an interesting class of goods that regulation makes into common property when such regulation requires that the goods be donated but does not specify the recipient of the donation. In such circumstances, people cannot keep the goods, because they must donate; their options are limited to the "to whom to give" question. A tax system, for example, creates goods with common property attributes much like market-inalienable goods. An early instance is given in *The Bible* when God requires a tithe to be paid to the Levites. *See, e.g.*, *Numbers* 18:21. God does not specify to which Levite the tithe must be paid (e.g., the neighborhood Levite), so the tax apparently can be paid to the Levite of one's choice. While the economic value of the tax no longer belongs to the taxpayer, it does not belong to a particular Levite until the tithe is handed over to him. Until then, it belongs to no one. The fact that the tithe is unassigned could lead Levites to dissipate its value by making expenditures to exhort taxpayers to tithe to them. In our day, a similar dissipation of grants from charitable foundations may occur. To maintain their favorable tax status, charitable foundations are required by the I.R.S. to disburse their funds. *See* I.R.C. § 4942 (1994). In effect, as with the tithe to the Levites, the foundations no longer have a right to the money—only the right to direct it. And as long as the funds are unassigned, potential grantees have every incentive to engage in activities that have the effect of dissipating the grants such as exhortation.

47. More generally, Barzel argues:

> A commodity announced to be free is effectively placed in the public domain and is of no value until ownership is established. Establishing ownership requires that an individual fulfill certain criteria; in the example here, the criterion is to spend five minutes in the queue. Acquisition of the commodity consumes real resources over and above the resources used in production. In this example, ownership is established over one already produced unit of the commodity. Methods differ from case to case, but whatever the method by which rights are acquired, it may generally be stated that resources must be spent to gain possession of commodities in the public domain, and that individual maximization applies here no less than to conventional exchange.

BARZEL, *supra* note 34, at 18.

B. *The General Common Property Problem*

As property rights to the commons are undefined and access to it is non-exclusive, ownership of the commons' resources is governed by the rule of capture. Under this rule, parties have exclusive rights to the resources that they manage to procure, resources that are free to them.[48]

Open access to a common property, such as the ocean, causes a well-analyzed congestion externality, first described by Scott Gordon.[49] The externality can be modeled in a simple static one-period model in which each fisherman's cost function depends not only on his level of production, but also on the aggregate level of production of the others fishing in the ocean. With average cost depending on aggregate ocean output, the marginal fishing of one fisherman imposes additional costs on all infra-marginal fishing.[50] This simple example illustrates why common property resources are used inefficiently. Individuals know that what they do not extract will be extracted by rivals, so they have little incentive to forego current extraction in favor of future extraction. In addition, individuals have little incentive to coordinate their efforts, as is true where traditional public goods are concerned. Consequently,

48. The term "free" is used to indicate that the resource itself has no cost. Naturally, costs may be incurred in capturing a free resource.

49. *See* H. Scott Gordon, *The Economic Theory of a Common Property Resource: The Fishery*, 17 J. POL. ECON. 124 (1954). For a modern treatment of the common property externality, see RICHARD CORNES & TODD SANDLER, THE THEORY OF EXTERNALITIES, PUBLIC GOODS, AND CLUB GOODS (1986).

50. The essence of a common property good can be appreciated by comparing it to a private good. Consider the economics of harvesting fish in a privately owned lake. The owner of a lake wishes to hire labor to fish and is willing to pay them the prevailing wage, say, the wage paid by McDonald's. If the owner expects the value of the fish caught by the first fisherman to exceed the wage, the lake owner will hire him. The owner will pocket the difference between the wage he paid the fisherman and the value of his catch. The value of the fish caught by the next fisherman to be hired will be less than the value of the first angler's catch because of congestion in the lake. However, as long as the value of the fish caught by each additional fisherman exceeds the wage he is paid, the owner will hire the additional fisherman. When the value of the fish caught by the *n*th fisherman drops below the wage he is paid, the owner of the lake will stop hiring.

This is the optimal level of fishing. Any additional fishing would be inefficient because the fisherman could produce greater value at an activity other than fishing. At the optimal level of fishing, the excess of the value of output over wage costs is the profit earned by the owner of the lake. This profit is the value of the fish.

Suppose now that the lake is made *common* property and that everyone has free access to the fish in it. If the existing fishermen can somehow collude and keep new workers from entering the fishing grounds, then they will continue to fish at the same level they did when the lake was private property—which has already been shown to be the efficient level. The fishermen will now pocket the profit that the owner received when the lake was private, increasing their earnings above the prevailing wage they earned when the lake was private. If there is open access to the lake, however, the higher earnings available to fishermen will attract workers who, in alternative work, can earn only the prevailing wage. If new entrants cannot be denied free access to the lake, then more fishermen will fish, which will result in inefficient overfishing (in comparison to the private property case). Once again, this inefficiency results from fishing at a level at which the value of the fishermen's catch is less than the prevailing wage that McDonald's might pay them.

When there is unlimited free access to the lake, we have the common property problem with its well-known associated "tragedy." The lake is overfished; that is, it is fished beyond the level it would be if the lake were privately owned. This overfishing is financed by the value of the fish, which, in the private property case, was profit earned by the lake's owner.

people underinvest in renewing the resource and in developing information that would benefit all producers.

To apply this analysis to the procurement of human organs, consider the agencies that procure and distribute the organs—the middlemen in the transplantation process. Suppose the organ procurement industry consists of a given number of profit-maximizing organ procurers, each with free access to a common-property "fishing ground" containing an exogenously fixed number of individuals capable of supplying organs. Each organ procurer combines a common-property resource—the organ—with its labor—exhortation—to produce a transplantable organ as output. With the size of the potential pool of organs fixed at S (the number of brain-dead cadavers, or the size of the population if we were to allow live donation), the total number of organs procured by all the organ procurers, Q, depends on the size of the total procurement effort, E, and on S. The aggregate production function is $Q = Q(E,S)$. Let Q_E and Q_S represent the derivatives with respect to E and S, and Q_{EE} the second derivative with respect to E; we expect $Q_E>0$, $Q_S>0$, and $Q_{EE}<0$.

The common property externality is introduced by allowing procurer i's cost to depend on aggregate procurement by the others in the region as well as on its own procurement, q^i.

If the cost function for the representative agency takes the form

$$C_i(q^i,Q,S) = q^i A(Q,S) \qquad (1)$$

where $A(Q,S)$ is the unit or average cost function for each firm in the region, then the well-known equilibrium condition is

$$P = (1/n)MC + [(n - 1)/n]AC \qquad (2)$$

where P is the exogenously determined price of output,[51] and MC and AC are the industry marginal and average costs of exhortation, respectively.[52]

51. While there might not be a market price for the market-inalienable good if procurers are not allowed to sell the good, procurers will at least be able to charge a reasonable fee reflecting their expenses. Moreover, a market-inalienable good like a human organ is an input into a process that results in a final good—a transplanted organ—for which there may be no limitation on price. Thus, for this thought experiment, the price P can be viewed either as a procurer's allowable reimbursable expenses or as that part of the price of the final good that reflects the value added by the market-inalienable good.

52. Organ procurer i's problem is to maximize his profit, π_i, with respect to q^i

$$\text{Maximize } \pi_i = q^i[P - A(Q,S)], \qquad (3)$$

where $q^i \geq 0$ and $Q = \Sigma q^i \leq S$. The procurement agency's optimal quantity of procurement must satisfy the first-order condition

$$d\pi_i/dq^i = 0 = P - q^i A_Q(Q,S) - A(Q,S). \qquad (4)$$

Equation (4) can be rewritten as

$$P = q^i A_Q(Q,S) + A(Q,S). \qquad (5)$$

Equation (2) shows that the equilibrium price of output, P, is the weighted sum of the marginal and average costs of total regional procurement. In the case of a sole organ procurer,[53] $n = 1$, so the second term of Equation (2) is zero, and the quantity of organs procured is such that the price of output equals the sole procurer's marginal cost of procuring organs. This is Point A in Figure 5. As the number of organ procurers grows large, however, the weight of the first term approaches zero while that of the second term approaches one. In the extreme, as n becomes very large, procurement efforts will increase until the average cost of output for all procurers in the region equals the output price of an organ. This is Point B in Figure 5.

Because agency i's costs depend on aggregate procurement by other agencies in that region, Q, the extent of the externality depends on the number of agencies involved. Since all agencies are assumed to be identical with the same unit cost function, then $q^i = Q/n$ for all i. Equation (5) can be rewritten to show how the externality varies with n:

$$P = (Q/n)A_Q(Q,S) + A(Q,S) \qquad (6)$$

or

$$P = (1/n)[A(Q,S) + QA_Q(Q,S)] + [(n - 1)/n]A(Q,S). \qquad (7)$$

For the industry as a whole, the cost function is

$$C(Q,S) = QA(Q,S), \qquad (8)$$

and the industry's marginal cost, MC, is

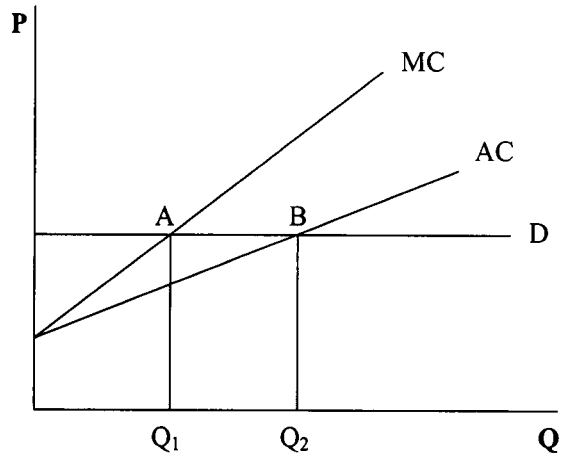
$$MC = dC/dQ = QA_Q(Q,S) + A(Q,S). \qquad (9)$$

Rewriting Equation (7) as a function of MC and average cost, AC, yields the common-property equilibrium condition:

$$P = (1/n)MC + [(n-1)/n]AC. \qquad (10)$$

53. Although the sole supplier is the only supplier from this region (or lake), he is one of many suppliers to the market and is, therefore, still a price taker and not a monopolist.

FIGURE 5

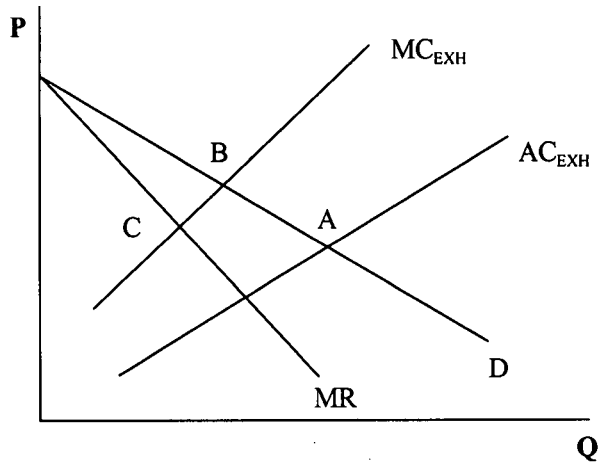


When the resource is held in common, the entire rent that would accrue to the owners of the resource if it were privately held is dissipated by inefficient overproduction at a level at which marginal cost exceeds the price of output. This is the standard result for common property resources.[54]

If a region contains many competing organ procurers, then, because of the common property feature of market-inalienable goods, the supply of each procurer will be represented by the average cost of exhortation. If there is competition in each region, then the aggregate market supply from all regions will be the sum of each competitor's average cost curve. Market equilibrium occurs at Point A in Figure 6.

54. It is noteworthy that rent dissipation in the common property model is due solely to congestion in the commons. If competitors in the commons were to use intimidation or other forms of destructive competition to enforce a property right, such as cutting each other's fishing lines, then such activities would raise average costs for each competitor. The aggregate market supply curve from all commons would in that instance lie above the congestion-externality only supply curve.

FIGURE 6



If, instead of many competitors in a region, there is only a single exhorter—the sole owner—then the region's supply will be represented by the sole owner's marginal cost of exhortation. If there is a sole owner in each region, then the aggregate supply will be the sum of each sole owner's marginal cost curve. If sole owners compete with other sole owners in other regions, then market equilibrium will occur at Point B in Figure 6. This is the competitive equilibrium for private property. However, if there is one monopolist who is the sole owner in each region, then market equilibrium will occur at Point C in Figure 6.[55]

In sum, theory suggests and experience confirms that common property will be overfished, depleting both current and future stocks. While the commons of human tissue under a market ban may also be "overfished," as in the standard model of the commons, the welfare implications of such a circumstance defy the standard view. By encouraging the procurement of tissue that otherwise would be discarded, treating human tissue as common property may actually *increase* its supply, if inefficiently.[56]

55. The table below summarizes the relationships depicted in Figure 6 ("X" indicates an impossible situation):

	Market	
Region (or Lake)	Competition	Monopoly
Many Competitors	A	X
Sole Owner	B	C

56. While current exhortation might actually enhance the effectiveness of future exhortation by changing attitudes toward donation, I do not pursue that extension of the argument in this Essay.

C. *Equilibrium Supply of Common Property Market-Inalienable Goods*

To observe the effect on equilibrium supply of reflecting average cost rather than marginal cost in the supply curve of the market-inalienable good, one must again consider how the market and donative sectors interact.

1. *Introducing a Market Will Cause Donations to Wither (Titmuss)*

Significantly, when many nonprofit procurers are competing in each region and the organs' rents are treated as common property, equilibrium supply will be determined by the intersection of demand and the *average* cost of exhortation. Thus, nonprofit competitors, whether they are surplus-maximizers or output-maximizers, will behave like for-profit competitors. The equilibrium supply of organs under exhortation will occur where demand equals the average cost of exhortation (Point 7 in Figure 3 where AC'_{EXH}, the average cost corresponding to MC'_{EXH}, intersects demand). Supply at this equilibrium will be greater than the market supply as long as the average cost of exhortation is lower than the marginal cost of the market (as depicted in Figure 3). This result will hold even if the marginal cost of exhortation exceeds that of the market.

2. *Introducing a Market Will Not Affect Donations (Arrow)*

If the entire industry is competitive (no sole owners in the donative sector), then the supply curve in the donative sector, because of competition for common property rents, will be the exhortation average cost curve. Let the term "total supply curve" ("*TSC*") refer to the horizontal sum of the market marginal cost curve and the exhortation average cost curve. The *TSC* in Figure 4 is shown to be to the right of *MC*. Equilibrium occurs at Point B where the *TSC* intersects the demand curve. If Point B is above the kink, then introducing markets will increase supply. If Point B is below the kink, then introducing markets will not affect equilibrium supply.

The relationship between the marginal and average costs of exhortation and the market cost is unknown. Which model of the interaction between the market and donative sectors most accurately reflects the effect of the introduction of a market is likewise unknown. While it is impossible to know (in the absence of a market) what the market price would have been, the cost of organs under the donative system does not seem prohibitive; on the contrary, it is relatively low.[57] But if exhortation is a cheap means of procuring organs, if greater effort yields more organs, and if the effect of making organs common property is to provide incentives to *over*-exhort people to donate, how are the apparent shortages in organs to be understood?

57. Elsewhere I have examined the cost of efforts to procure market-inalienable organs and found this cost to have been approximately $1650 per organ in 1990. *See* Thorne, *supra* note 36, at 196.

There is, in fact, no over-exhortation of common-property organs because regulatory policy grants regional monopolistic franchises to procurement organizations. Consequently, property rights to the organs that are potentially available in each region are assigned. But why is there *under*-exhortation of organs? What are the obstacles to procuring a greater supply of market-inalienable goods and more fully exploiting the donative system's efficiency? Although in-depth investigation of these questions is beyond the scope of this Essay, the difficulties associated with the organization of procurement efforts by nonprofits and with reliance on exhortation should be considered to be candidates for analysis.[58]

Conclusion

This investigation of the arrangements people make in the face of a market ban—an extreme form of market failure—suggests that, in the case of some goods and services, people donate in response to an alternative production technique that relies on exhortation. Although different from Titmuss's arguments in spirit and approach, this Essay supports his conclusion that, at least theoretically, conditions exist under which regulation that makes a good market-inalienable could produce a result that is both ethical and efficient (in the sense that it need not cause a reduction in supply). While the purpose of this Essay is to address the concerns of shortages and efficiency, the present analysis may also have implications for debates concerning equity, liberty, or "things important to personhood."[59]

The debate over the consequences of market-inalienability is highly ideological, with little appeal to empirical evidence.[60] The model of market-inalienability put forth here provides a theoretical basis for a viable and possibly efficient alternative to a market. Now that an alternative theory is available, to assert that a market would increase supply will require empirical support.

This Essay does not constitute a broad attack on the efficiency of the market. Its discussion of donative supply is confined to a sphere of activity

58. *Cf.* Emanuel D. Thorne, *The Shortage of Market-Inalienable Human Organs: A Consideration of "Non-Market" Failures*, 57 AM. J. ECON. & SOC. (forthcoming July 1998) (analyzing the obstacles to exploiting more fully the donative system's potential efficiencies).

59. Radin, *supra* note 1, at 1850.

60. *But cf.* Thorne, *supra* note 36, at 196 (noting that exhortation costs only $1650 per organ). Operating without offering market incentives to organ donors, the organ transplant industry now procures and transplants about 16,000 organs annually, *see* ANNUAL REPORT, *supra* note 3, at 65, at a cost of more than $3 billion, *see* Thorne, *supra* note 36, at 199. The $25 to $30 million annual cost of procuring donations is a strikingly small fraction of the total cost of organ transplants. *See id.* Also, increased expenditures appear to be associated with an increased yield of organs. This relationship can be seen in two ways. First, a 50 percent increase in the aggregate real cost of acquiring organs between 1988 and 1990 was associated with a 13 percent rise in the total number of kidneys procured. *See id.* at 196. Furthermore, a cross-sectional analysis of organ procurement organizations showed that those organizations that engaged in greater procurement effort attracted more donors. *See id.* at 196-99. In short, procuring organs by donation appears to be cheap, and organ shortages may be due to inadequate effort rather than the inefficiency of appeals to donor altruism. *See generally* Thorne, *supra* note 58.

where donation appears to work. In this specific context, people may behave more efficiently under a market ban than under a free market.

What is the source of this efficiency? How can one characterize the appropriate domain of market-inalienability? These, of course, are key questions in the study not only of organ transplatation but also of other ethically problematic activities. The analysis herein suggests that it might be fruitful to define the sphere of ethically problematic activities for which market bans do not reduce supply. This domain is often thought to comprise goods and services supplied within the family or in other situations in which ties of kinship obtain. Indeed, it can be argued that government programs such as Social Security, which one can view as having commodified the care of parents by children, are inefficient and should be replaced by non-commodification and reliance on the family. We might also find that feelings of kinship, as expressed through donation, extend past family to include strangers. If such feelings of connectedness can be enhanced by activities that promote civic virtues, then such efforts might be not only ethically and politically desirable but also efficient. The task remains to specify the domain of ethically problematic activities in which regulation by market ban might be effective.

Appendix

Interaction of Market and Donative Sectors: Must Markets Disrupt Donations?

The theory of exhortation offers an insight into how organ donors might respond if the market ban were lifted and they had the opportunity to sell. This theory rests on three assumptions: (1) People experience disutility associated with the removal of a dead loved one's organ; (2) The disutility can be overcome either by the utility conferred by goods bought with financial compensation or by the utility offered by donation; and (3) People vary with respect to the amount of disutility they experience and, thus, with respect to the extent of financial payment or exhortatory appeal necessary to overcome their disutility. Figure 7 shows what a market supply curve for cadaveric organs might look like when each supplier can supply only one organ. The quantity supplied at each point reflects the number of individuals to whom the corresponding reservation price applies. Figure 8 shows the marginal cost of exhortation (MC_E) in the absence of a market. Again, assuming one organ per individual, the supply of organs at each point reflects the number of individuals who will donate at the corresponding level of exhortation effort.

FIGURE 7

Market Sector

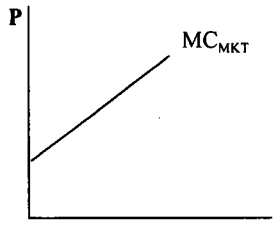
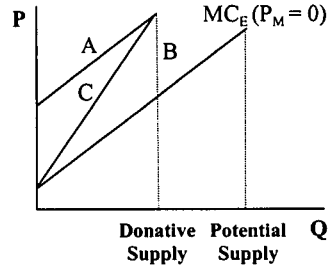


FIGURE 8

Donative Sector



Whether and how much the introduction of a market might reduce donated supply depends on the degree to which individuals who would otherwise donate would opt to receive payment instead. Let P_M be the organ's market price, P^i be an individual i's reservation price, MC_E be the marginal cost of exhortation for the last organ procured, and MC^i be the exhortation cost required to procure individual i's organ.

Whereas individuals will have different P^i and MC^i, all individuals will use the following rule in deciding whether to sell, donate, or bury the organ:

a. If $P_M \geq P^i$, then individual i will sell in the market (even if $MC_E \geq MC^i$);

b. If $P_M < P^i$ and $MC_E \geq MC^i$, then individual i will donate;

c. If $P_M < P^i$ and $MC_E < MC^i$, then individual i will neither sell nor donate.

Suppose that individuals with a low P^i also had a low MC^i, and that those with a high P^i had a high MC^i. Then individuals would be arrayed in the donative sector in the same order as they are in the market. In this case, introduction of a market would cause all those individuals for whom $P_M \geq P^i$ to drop out of the donative sector, and MC_E would shift to a curve such as A (Figure 8).

If individuals with a low P^i had a high MC^i and those with a high P^i had a low MC^i, then individuals in the donative sector would be arrayed inversely to their order in the market. Thus, individuals who most prefer to donate would be the least attracted to the market, and vice versa.[61] The decision rule stated before would apply, but now it would be individuals on the upper part of the MC_E curve who would switch to the market. In this case, MC_E would shift to a curve such as B (Figure 8).

If, P^i and MC^i are completely unrelated, then MC_E would rotate left to Curve C (Figure 8). In any case, it seems unlikely that the donative supply would be *completely* unaffected by the introduction of a market.

In summary, even if Titmuss's view—that donors would cease to give if a market were established—is mistaken, it is not obvious that Arrow's view would be entirely correct.

61. Donors often report feeling that the tragic death of their loved one was somewhat "redeemed" by their gift of life. *See* Elisabeth Rosenthal, *Parents Find Solace in Donating Organs*, N.Y. TIMES, May 11, 1993, at C1. While some people might report revulsion at the prospect of making money from their tragedy, there may be a price at which they would sell. However, it might be cheaper to exhort them.